

1. A method of radar processing comprising:
  - radiating a first signal beam from an antenna of a first radar in the direction of a target;
  - radiating a second signal beam from an antenna of a second radar in the direction of the target;
  - receiving echo signals from the first signal beam at the first and second radars;
  - receiving echo signals from the second signal beam at the first and second radars;
  - processing the echo signals received at the first radar to produce first radar processed echo signals;
  - processing the echo signals received at the second radar to produce second radar processed echo signals; and
  - combining the first and second radar processed echo signal values to form an aggregate value.
- 15 2. The method of claim 1 wherein the first and second signal beams have respective first and second carrier frequencies which are different.
3. The method of claim 2 wherein combining comprises combining incoherently all of the first and second radar processed echo signals.
- 20 4. The method of claim 2 wherein combining comprises:
  - combining coherently those of the first and second radar processed echo signals that have the first carrier frequency;
  - combining coherently those of the first and second radar processed echo signals that

have the second carrier frequency; and

combining incoherently the results of the coherent combination for the first and second carrier frequencies.

5       5.     The method of claim 1 wherein the first and second signal beams have the same carrier frequency.

6.     The method of claim 5 wherein combining comprises:

combining coherently those of the first and second radar processed echo signals from 10 the first signal beam to produce a first result;

combining coherently those of the first and second radar processed echo signals from the second signal beam to produce a second result; and

combining coherently the first and second results.

15     7.     The method of claim 5 wherein combining comprises:..

combining coherently those of the first and second radar processed echo signals from the first signal beam to produce a first result;

combining coherently those of the first and second radar processed echo signals from the second signal beam to produce a second result; and

20     combining incoherently the first and second results.

8.     The method of claim 5 wherein combining comprises:

combining incoherently those of the first and second radar processed echo signals from the first signal beam to produce a first result;

combining incoherently those of the first and second radar processed echo signals from the second signal beam to produce a second result; and combining incoherently the first and second results.

- 5       9.     The method of claim 8 wherein the first and second signal beams are transmitted sequentially in time.
- 10      10.    The method of claim 1 wherein the antennas are synchronized rotating antennas.
- 10      11.    The method of claim 1 wherein the antennas comprise non-rotating phased arrays.
12.     A method of processing by a radar comprising:  
radiating a first signal beam in the direction of a target;  
receiving echo signals from the first signal beam;
- 15     receiving echo signals from a second signal beam radiated by a second radar in the direction of the target, the radar and the second radar being spaced a predetermined distance apart; and  
processing the echo signals from the first and second signal beams.
- 20     13.    The method of claim 11 further comprising:  
combining the processed echo signals with echo signals from the first and second signal beams that have been received by the second radar and processed, to form an aggregate value.
- 25     14.    A radar comprising:

an antenna to radiate a first signal in the direction of a target;  
a receiver to receive echo signals from the first signal beam and echo signals from a second signal beam radiated by a second antenna of a second radar in the direction of the target; and

5           circuitry to process the echo signals from the first and second signal beams, and to combine the processed echo signals with echo signals from the first and second signal beams that have been received by a receiver of the second radar and processed, to form an aggregate value.

10       15. The radar of claim 14 wherein the circuitry comprises a digital signal processor.

16. The radar of claim 14 wherein the circuitry comprises analog circuitry.

17. The radar of claim 14 further including circuitry to synchronize rotation of the  
15       antenna with the second antenna of the second radar.

18. The radar of claim 14 wherein the first and second signal beams have respective first  
and second carrier frequencies which are different.

20       19. The radar of claim 18 wherein the circuitry combines the processed echo signals  
using incoherent integration.

20. The radar of claim 18 wherein the circuitry combines the processed echo signals  
using both coherent and incoherent integration.

21. The radar of claim 14 wherein the first and second signal beams have respective first and second carrier frequencies which are the same.
22. The radar of claim 21 where the circuitry combines the processed echo signals using  
5 coherent integration.
23. The radar of claim 21 wherein the circuitry combines the processed echo signals using incoherent integration.
- 10 24. The radar of claim 21 wherein the circuitry combines the processed echo signals using both coherent and incoherent integration.